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INFORMATION REPORT

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1. [redacted]

2. "We have carried out comparative tests with the different products, Parker 100, Bonderite 200, Granodine 200, Parker 180, and in every case we have applied the following two sets of treatments:

A - Degreasing PARCO 406 - 4% - 90°F
Cold rinse
Hot rinse
Treatment
Cold rinse
Hot rinse
Drying

B - Same set, but with the introduction of de-ruster of Parcodine 74 at 25% for 10 minutes at a temperature of 60°F. The characteristics of the baths used are the following:

Parker 100: 35 cc/l.
Free acidity 5.3
Total acidity 30
Ratio 5.6
Temperature 85°F.

Bonderite 200: 62 g/l. of Bonderite 200 + 27 g/l. of Bonderite salt 200 A + 0.25 g/l. of nitrate of soda

Total acidity 34.4
Free acidity 6.2
Ratio 5.5

Temperature 65°F."

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"Granodine 200: 35 cc/l.

Free acidity	5.3
Total acidity	30
Ratio	5.6

Temperature 85°F.

Parker 180: 100 g/l.

Free acidity	5.5
Total acidity	30
Ratio	5.4

Temperature 80/85°F.

3. "In each case we respected uniform intervals of 10 minutes in degreasing, derusting and treatment. After treatment we carried out brine tests at 30 g/l. for 15 minutes (armament norms). We obtained the following results by applying the second set with derusting:

Parker 180: No stain

Bonderite 200: Very slight yellowing

Parker 100: Slight yellowing

Granodine 200: General yellowing and some rust spots.

The same tests with the set not including a derusting operation gave identical results but much less pronounced.

4. "All these products work under identical conditions. The ratio included is between 5.3 and 5.6. On the other hand, the presence of an accelerator is variable in each case, thus:

Parker 180 -	NO_3	-	13.5 g/l.
Bonderite 200 -	NO_3	-	18.5 "
Parker 100 -	NO_3	-	7.5 "
Granodine 200 -	NO_3	-	3.8 to 5 g/l.

5. "This variable presence of an accelerator is motivated primarily for Bonderite 200 by a lower utilization temperature, 65°F. On the other hand, for the other three products, we notice that the most stable product and the one giving the best results is the one which contains the highest quantity of accelerator (Parker 180).

6. "From these tests, one can foresee for the treatment of projectiles:

A. For the treatment of hardened projectiles, the use of the product Parker 180

B. For the treatment of cast projectiles:

a) If the projectiles are free from rust and calamine, Spra Bonderite 100 will be used

b) If the shells are oxydized, Parker 100 can be used after having carried out derusting operations with Parcodine 74.

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7. "In the course of these tests, we have ascertained that: Bonderite 200 gives crystalline layers of very light gray, but the use of this product for the treatment of projectiles is made difficult by the very rapid formation of sludge; actually, since we must always keep a small portion of accelerator (nitrate of soda) in the bath, we precipitate the ferrous iron as it dissolves. It is, moreover, the absence of ferrous iron in the bath which characterizes the very pale color obtained.

8. "Parker 180 is a very stable product perfectly suited to the treatment of projectiles. The rise in ferrous iron is very slow, and, because of this, the bath closely approximates the DA; on the other hand, its rather low ratio (5.3) makes a much more active product of it, one which allows us to obtain a more pronounced phosphatization in a shorter time. This product stands very well the previous derusting operation in one set.

9. "Such is not the case with the following two products:

Granodine 200 and Parker 100.

Granodine 200 and Parker 100 are quite unstable and the ferrous iron rises very rapidly; because of this fact it is necessary to watch the bath most attentively and to precipitate the ferrous iron often with nitrate of soda. On the other hand, these kinds of products give very important coats which resist corrosion well, on condition that the content of ferrous iron be maintained between 0.5 and 2 g/l. The treatment periods are very short, about five to 10 minutes."

END